

USER MANUAL

TECHLINE[®]
IMPROVING FLEXIBILITY

SMPS-T160



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WWW.LINAK.COM

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WE IMPROVE YOUR LIFE

Contents

Preface	4
LINAK application policy	5

Chapter 1

Safety instructions	6
Important information	7
Recommendations	7
Safety issues	7

Chapter 2

Mounting guidelines	8
SMPS-T160 system possibilities	9
Electrical installation	10
Connection diagram and I/O specifications:	
SMPS with standard output interface	10-11
Connection diagram and I/O specifications:	
SMPS Hand Control version	12-13

Chapter 3

Troubleshooting	14
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Chapter 4

Specifications	15
Usage	15
Output	16
System example	16
System combination possibilities	17
Cables	18
Dimensions	19-20
Label for SMPS-T160	21
Key to symbols	21
Ordering example	22

Chapter 5

Maintenance/cleaning	23
Repair	23
Main groups of disposal	23
Warranty	24
Declaration of conformity	25
Declaration of Incorporation of Partly Completed Machinery	26
Addresses	28

Preface

Dear User,

We are delighted that you have chosen a product from LINAK®.

LINAK systems are high-tech products based on many years of experience in the manufacture and development of actuators, electric control boxes, controls, and chargers.

This user manual does not address the end-user, but is intended as a source of information for the manufacturer of the equipment or system only, and it will tell you how to install, use and maintain your LINAK electronics. It is the responsibility of the manufacturer of the end-use product to provide a User Manual where relevant safety information from this manual is passed on to the end-user.

We are sure that your LINAK product/system will give you many years of problem-free operation. Before our products leave the factory they undergo full function and quality testing. Should you nevertheless experience problems with your LINAK product/system, you are always welcome to contact your local dealer. LINAK subsidiaries and some distributors situated all over the world have authorised service centres, which are always ready to help you.

LINAK provides a warranty on all its products. This warranty, however, is subject to correct use in accordance with the specifications, maintenance being done correctly and any repairs being carried out at a service centre, which is authorised to repair LINAK products.

Changes in installation and use of LINAK products/systems can affect their operation and durability. The products are not to be opened by unauthorised personnel.

The User Manual has been written based on our present technical knowledge. We are constantly working on updating the information and we therefore reserve the right to carry out technical modifications.

LINAK A/S

LINAK APPLICATION POLICY

The purpose of the application policy is to define areas of responsibilities in relation to applying a LINAK product defined as hardware, software, technical advice, etc. related to an existing or a new customer application.

LINAK products as defined above are applicable for a wide range of applications within the Industry areas. Yet, LINAK cannot know all the conditions under which LINAK products will be installed, used, and operated, as each individual application is unique.

The suitability and functionality of the LINAK product and its performance under varying conditions (application, vibration, load, humidity, temperature, frequency, etc.) can only be verified by testing, and shall ultimately be the responsibility of the LINAK customer using any LINAK product.

LINAK shall be responsible solely that LINAK products comply with the specifications set out by LINAK and it shall be the responsibility of the LINAK customer to ensure that the specific LINAK product can be used for the application in question.

Chapter 1

Safety instructions:



Please read the following safety information carefully.

Ensure that all staff who are to connect, mount, or use the SMPS-T160 are in possession of the necessary information and that they have access to this user manual.

Persons who do not have the necessary experience or knowledge of the product/products must not use the product/products. Besides, persons with reduced physical or mental abilities must not use the product/products, unless they are under surveillance or they have been thoroughly instructed in the use of the apparatus by a person who is responsible for the safety of these persons.

Moreover, children must be under surveillance to ensure that they do not play with the product.

Before installation, re-installation or troubleshooting:

- Stop the application
- Switch off the power supply and pull out the mains plug
- Relieve the application of any loads, which may be released during the work

Before start-up:

- Make sure that the system has been installed as instructed in the User Manual
- System connection. The individual parts must be connected before the SMPS-T160 is connected to the mains.

During operation:

- Ensure that the cables are not damaged
- Unplug the SMPS-T160 before moving the equipment
- If the control box makes unusual noise or smells, switch off the mains voltage immediately.
- Take care that the cables are not damaged.
- The product must only be used in an environment, that corresponds to its IP protection.

Device protection:

The SMPS-T160 contains several mechanisms to protect itself from being damaged due to excessive use.

- In case of overheating, the device will activate a thermal protection. No power output will be available until the temperature is back again within normal operating range.
- In case of exceeding the current limit / failure in the actuator, the device will activate an overload protection. Immediately after the situation has been remediated the power output will be available again.

Hot plugging:

- It is not allowed to remove or to add the output cable as long as the SMPS-T160 is powered by mains.

When the equipment is not in use

- Switch off the mains supply in order to prevent unintentional operation.
- Check the SMPS and joints regularly for extraordinary wear.

Important information:

Be aware of the following three symbols throughout the user manual:



Warning!

Failing to follow these instructions can cause accidents resulting in serious personal injury.



Recommendations

Failing to follow these instructions can result in the actuator suffering damage or being ruined.



Additional information

Usage tips or additional information that is important in connection with the use of the actuator.



Recommendations:

- Only use the SMPS-T160 within specified working limits.
- Do not place load on the SMPS-T160 housing and do prevent impact or blows, or any other form of stress to the housing.
- Ensure that the cable cover is mounted correctly. Use 1.5Nm torque.
- Ensure that the duty cycle and the usage temperatures for the SMPS-T160 are respected.
- Ensure that the cable cannot be squeezed, pulled or subjected to any other stress.

Safety issues:



The builder of the equipment shall ensure that the use of the component complies with relevant standards – like the Machine Directive. Care must be taken to avoid squeezing of cables as it can cause movement of the system!

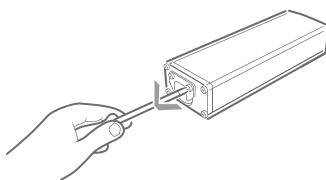


The SMPS-T160 must not be packed in heat insulating material, but must be placed so that it can emit waste heat to the surroundings. There are no ventilation holes to consider, the SMPS emits heat through its surface.

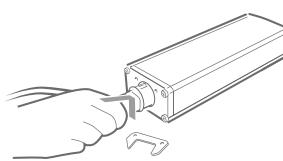
Chapter 2

Mounting guidelines:

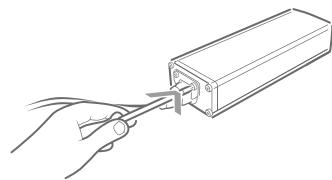
If the SMPS-T160 comes with mains cable already mounted, please go to step 4.



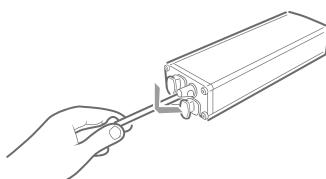
1. Unscrew the cable lock



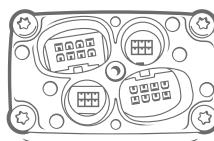
2. Plug in the power cable



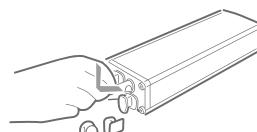
3. Screw the cable lock back on



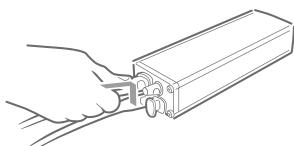
4. Unscrew the cable lock



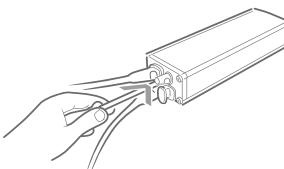
5. The 4 sockets give you 5 different connection possibilities. Please see table on page 9.



6. Remove the plugs according to the number of sockets needed.



7. Plug in the cables.



8. Screw the cable lock back on.

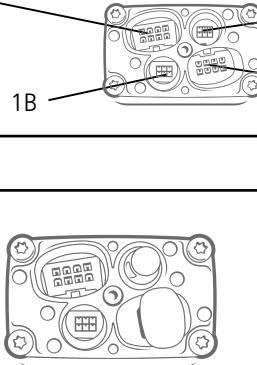
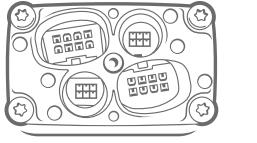
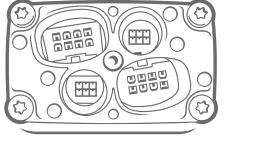
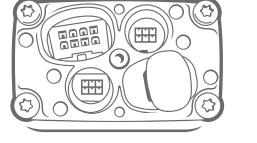


- Unused sockets must be sealed with a blind plug!
- It is recommended to shield the SMPS-T160 from direct rain and sunlight to avoid overheating and wear and tear over time.
- When changing the cables on a LINAK SMPS-T160, it is important that this is done carefully, in order to protect the plugs and pins. Please be sure that the plug is in the right location and fully pressed in before the cable lid is mounted.
- We recommend to take some precaution and design the wire connection in a way, where the cable end is kept inside a closed, protected area to guarantee the high IP protection.



Different bracket types are available - to know more, please contact your local LINAK supplier.

SMPS-T160 system possibilities:

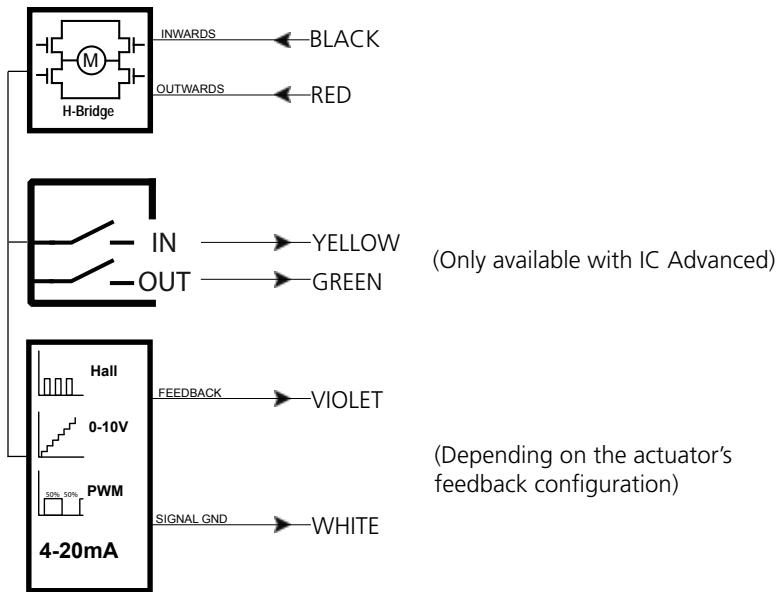
Interface:			
System:	How to connect:		
1 Hand control + 1 actuator		1A	Actuator 1
		1B	Hand control 1
		2A	Plugged
		2B	Plugged
2 hand controls + 2 actuators		1A	Actuator 1
		1B	Hand control 1
		2A	Actuator 2
		2B	Hand control 2
1 Bluetooth/RF receiver + 1 alternative control + 2 actuators		1A	Actuator 1
		1B	Bluetooth/RF receiver
		2A	Alternative control
		2B	Actuator 2
1 Bluetooth/RF receiver + 1 alternative control + 1 actuator		1A	Actuator 1
		1B	Bluetooth/RF receiver
		2A	Alternative control
		2B	Plugged
1 Bluetooth/RF receiver + 1 alternative control + 2 actuators		1A	Actuator 1
		1B	Bluetooth/RF receiver
		2A	Alternative control
		2B	Actuator 2

Electrical installation:

Output interface: standard

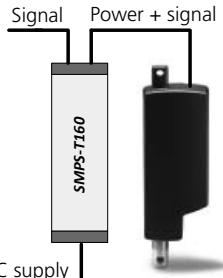
Connection diagram:

Fig. 1 : SMPST160+6UX0X0



SMPS with standard output interface:

I/O specifications:

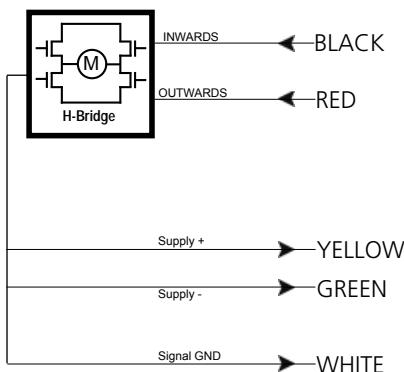
Input/Output	Specification	Comments
Description	The actuator is powered by the SMPS and the signals are transferred to a signal cable if attached to the SMPS	
Red	Extends the actuator	On/off voltages: $> 67\% \text{ of } 29 \text{ V DC } (V_{IN}) = \text{ON}$ $< 33\% \text{ of } 29 \text{ V DC } (V_{IN}) = \text{OFF}$
Black	Retracts the actuator	Input current: 10 mA
Green	Endstop signal out	Output voltage min. $29 \text{ VDC } (V_{IN}) - 1\text{V}$ Source current max. 100 mA Endstop signals are NOT potential free.
Yellow	Endstop signal in	For further information, see the relevant I/O specifications' scheme in the actuator's user manual
Violet	Analogue feedback (Hall Pot): Configure any high/low combination between 0-10V	For further information, see the relevant I/O specification's scheme in the actuator's user manual
	Single Hall output (PNP)	
	Digital output feedback PWM: Configure any high/low combination between 0-100%	
	Analogue feedback (4-20 mA): Configure any high/low combination between 4-20 mA	
	All absolute value feedbacks (Hall Pot, PWM and 4-20 mA)	
White	Signal GND	For further information, see the relevant I/O specification's scheme in the actuator's user manual

Output interface: Hand control

To be used when connecting with: Bluetooth, RF, HB, DP or flying leads

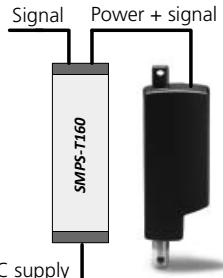
Connection diagram:

Fig. 2: SMPST160+6UX1X0



SMPS Hand Control version:

I/O specifications:

Input/Output	Specification	Comments
Description	The actuator is powered by the SMPS and the signals are transferred to a signal cable if attached to the SMPS	 <p>Signal Power + signal AC supply</p>
Red	Extends the actuator	For further information, see the relevant I/O specifications' scheme in the actuator's user manual
Black	Retracts the actuator	
Green	Supply -	Output: 29 V DC ±10%
Yellow	Supply +	Current limit: 300 mA (Overvoltage caused by soft stopping actuator can reach 38 V)
Violet	Not to be connected	
White	Signal GND	For further information, see the relevant I/O specifications' scheme in the actuator's user manual

Chapter 3

Troubleshooting:

Symptom	Possible cause	Action
No motor sound or movement of the piston rod	No mains Wrongly connected signal cables for moving in and out	<ul style="list-style-type: none">Check the AC supplyChange cable Check the signal wiring: Outwards: Red wire +24VDC Inwards: Black wire +24VDC
Actuator stops or no movement	24 V DC power supply has been turned off.	<ul style="list-style-type: none">Actuator has been overloaded >5.5 A.The actuator has exceeded the accepted duty cycle (>10%)The power supply will automatically reengage after few minutes.
Slow moving actuator	The output power has been reduced due to high internal temperature.	<ul style="list-style-type: none">Actuator is overloadedThe actuator has exceeded the accepted duty cycle (>10%)The ambient temperature is too high. Can be caused by direct sun light impact.The power supply will switch back to normal power when the temperature has dropped again.
No power for the hand control	The auxiliary power supply has been cut off, due to too high power consumption (>300 mA)	<ul style="list-style-type: none">Check the control cables for short circuit.Too high current consumption in the control unit.The polyfuse will automatically reengage the power after a few minutes.

Chapter 4

Specifications:

- Nominal input voltage (mains voltage): 100 V AC - 240 V AC +10/-15%, Universal input voltage
- Nominal input frequency: 50 Hz / 60 Hz
- Typical standby power consumption: Approx. 0.1 W
- Housing colour: Dark Olivish Grey
- Protection class: IP66

Usage:

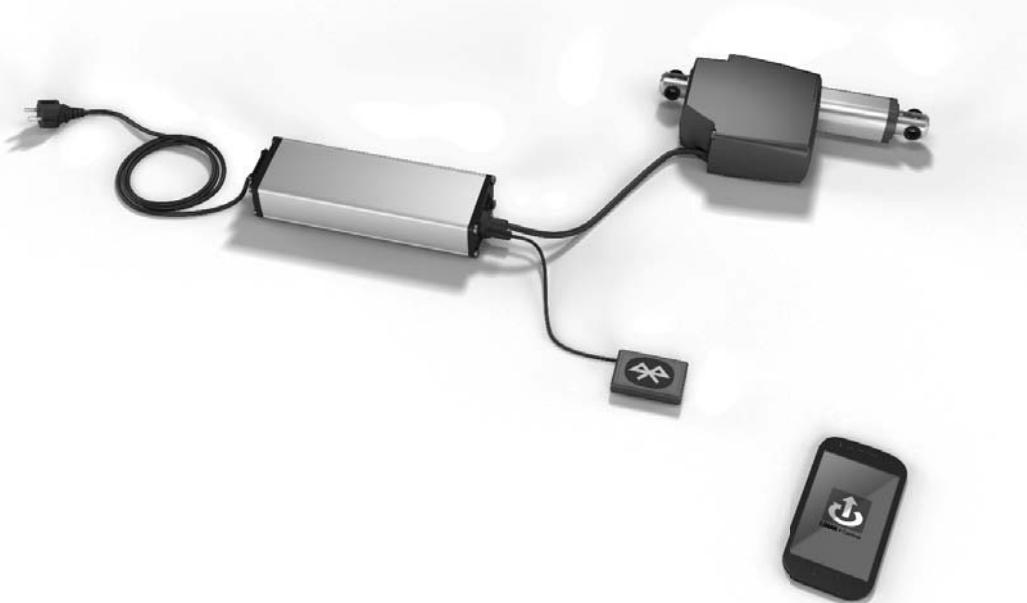
- Compatibility: LA14 IC™, LA25 IC™, only 24 V DC
- Duty Cycle: 10%, 2 minutes continuous use followed by 18 minutes not in use.*
- Operating temperature: -20°C to 40°C
- Storage temperature: -40°C to 70°C
- Relative humidity: 20% to 90% @ 30°C – not condensing
- Atmospheric pressure: 700 to 1060 hPa
- Altitude: Max. 2000 metres above sea level
- To extend/retract the actuator: A voltage greater than 21 V DC must be applied to red/black wire.
- To stop extending/retracting the actuator: A voltage less than 9 V DC must be applied to red/black wire (normally 0 V DC)
- Approvals: The SMPS-T160 is approved according to the following standards:
 - 2004/108/EC, EMC Directive
 - 2006/95/EC, Low Voltage Directive
 - EMC Standards:
 - EN 55014-1:2006+A1:2009+A2:2011
 - EN 55014-2:1997+A1:2001+A2:2008
 - EN 61000-3-2:2006+A1:2009+A2:2009
 - EN 61000-3-3:2013
 - Safety Standards:
 - EN 61558-1:2005+A1:2009
 - EN 61558-2-16:2009+A1:2013

* Please be aware that the SMPS-T160 has a lower duty cycle than the actuator. This must be respected!

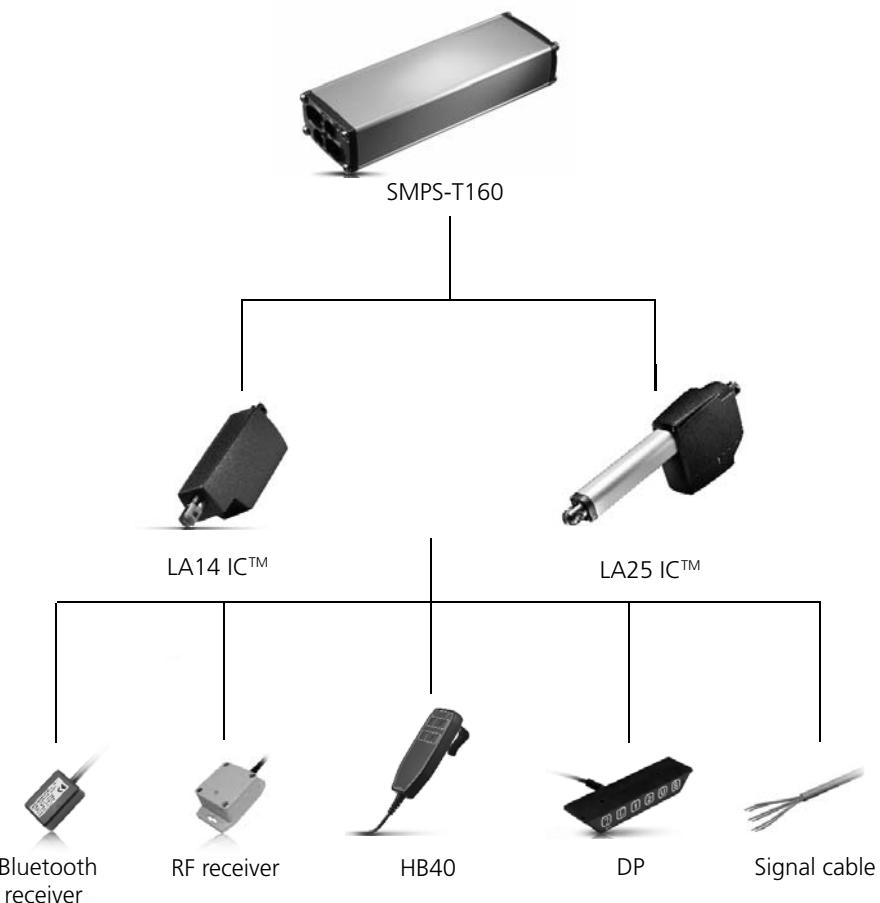
Output:

- Nominal output voltage 29 V DC (V_{IN})
- Ripple ≤ 500 mVp-p
- Total Output current 5.5 A at a duty cycle of 10% Ton= 2 minutes
- Please be aware if connecting an external control to an SMPS configured with an output interface: Hand control. The unit connected should be capable of tolerating overvoltage, caused by soft stopping actuators. Overvoltage caused by soft stopping actuators can reach up to 38 V.
- Furthermore, please be aware that the supply to control units are limited to 300 mA each.

System example:



System combination possibilities:



Type:	Article No.	
Bluetooth receiver Compatible with iPhone 4S and up or Android	TR-LMC2015*	
RF receiver	EU Market (868.3MHz)	US market (916 MHz)
TXP transmitter	TR-TVPLRX868A02*	TR-TVPLRX916A02*
EVO transmitter	TR-TVEVO868N03*	TR-TVEVO916S03*
HB40	HB4X051-01	
DP	DP042-00	
Standard TECHLINE signal cables	See the table "TECHLINE signal cables" on page 18	

*For more information, please go to www.linakthirdparty.com

Cables:

The SMPS-T160 is designed with exchangeable cables.



Note:

- The signal and power cables must be ordered either separately or together with the actuator.

Mains cables:

Plug types	Article No.	Material	# Wires	Size	Colour	Length (mm)	Cable type
UL	SML912065	PVC	3	18AWG	Black	3200	Straight
Japan/CH (Swiss)	SML912066	PVC	3	0.75mm2	Black	3200	Straight
Australia	SML912067	PVC	3	0.75mm2	Black	3200	Straight
UK	SML912099	PVC	3	0.75mm2	Black	3200	Straight
EU	SML912098	PVC	3	0.75mm2	Black	3200	Straight/angle

Connection cable* between SMPS and actuator:

Plug types	Article No.	Material	# Wires	Size	Colour	Length (mm)	Cable type
Minifit	1008w7200-300	PVC	8	18AWG	Black	300	Straight
Minifit	1008w7200-1500	PVC	8	18AWG	Black	1500	Straight

* Can be ordered separately or mounted on LA14/LA25.

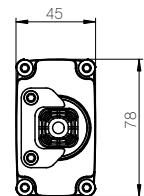
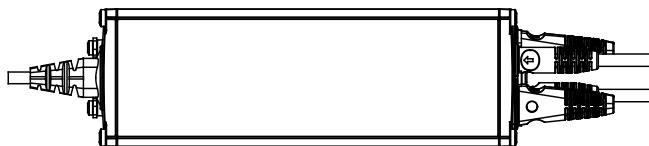
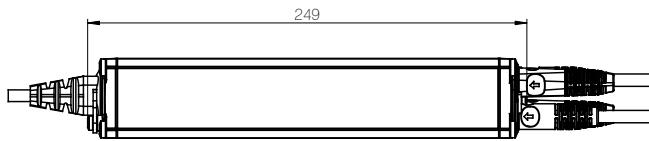
TECHLINE signal cables:

Plug types	Article No.	Material	# Wires	Size	Colour	Length (mm)	Cable type
Flying leads*	0367049-1500	PVC	6	20AWG	Black	1500	Straight
Flying leads*	0367049-5000	PVC	6	20AWG	Black	5000	Straight

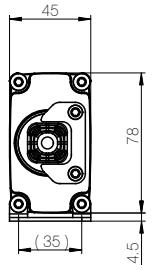
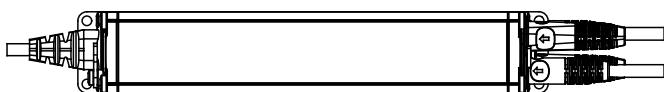
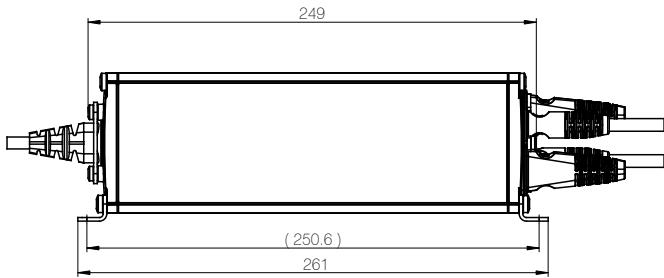
* The cable comes with an AMP connector that can be removed for flying leads

Dimensions:

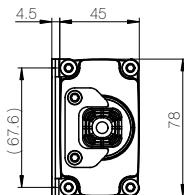
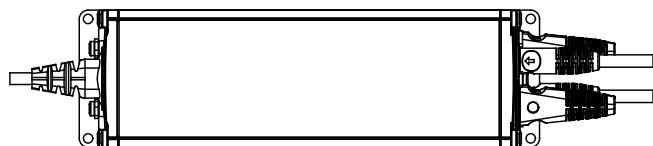
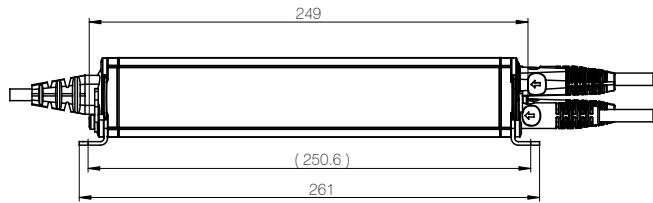
Without brackets:



With short brackets:



With long brackets:



Label for SMPS-T160:



WE IMPROVE YOUR LIFE
DESIGNED IN DENMARK

Item No. : SMPST160+6U0000

Prod. Date : 2014.11.05

Max Load : 29VDC 5.5A IPX6 Class 2 power supply

Power Rate:100-240V~ 50/60 Hz 1.6A

Duty Cycle : 10%, Max. 2 min./18 min.

 NOT TO BE OPENED BY UNAUTHORIZED PERSONNEL
 NE PAS OUVRIR PAR DU PERSONNEL NON AUTORISE



W/O #0000



1. Item no.: SMPST160+6U0000

Sales and ordering code

2. Prod. Date.: YYYY.MM.DD

Production date describes when the product has been produced. This date is the reference for warranty claims.

4. Max Load.: 29VDC 5.5A IPX6 Class 2 power supply

Describes the maximum load that the product can be exposed to in compression and tension. This line also contains a reference to the product's IP protection degree

5. Power Rate.: 100-240VAC 50/60 Hz 1.6 A

Input voltage for the product and maximum current consumption

6. Duty Cycle.: 10%, max 2 min./18 min.

The duty cycle defines the maximum period during operation without interruption. After operation, a pause must be observed. It is important that the operator follows the instructions of the duty cycle; otherwise, a possible overload may result in reduced product life/errors

7. W/O: #-0000

The LINAK work order followed by a unique sequential identification number

Key to symbols:

The following symbols are used on the SMPS-T160 label:

Symbol	Norms	Approvals
	WEEE Directive 2002/96/EC	Wheelie bin
	Compliance to all relevant EC directives	CE
	C-Tick 2002: The Australian EMC	C-Tick
	China Pollution control mark (also indicates recyclability)	China RoHS legislation
	ISO 7000- 0434A: Caution	
	IEC 60417-5172: Class II equipment	
	Operating instructions	

Ordering example:

SMPS	T160	+	6	U	0	0	0	0		
									Not used	0
									Fixed mains cable	
									Output interface	
									Bracket	
									Input voltage	U = Universal (100V → 240V)
									Ingress protection	6 = IP66
									Colour	+ = Dark Olivish Grey
									Variant	T160 = 160 W
									Type	SMPS = Switch mode power supply

Chapter 5

Maintenance/cleaning

- The SMPS must be cleaned at regular intervals to remove dust and dirt and it must be inspected for mechanical damage, wear and breaks
- It is not allowed to spray directly with a high-pressure cleaner on the device
- Interconnecting cables must remain plugged in, correctly fitted with O-rings, during cleaning to prevent ingress of water
- Unused slots must be sealed by a blind plug!
- The SMPS-T160 is resistant to the majority of cleaners and disinfectants. However, the detergents must comply with the following basic requirements
 - They must not be highly alkaline or acidic (pH value 6-8)
 - They must not contain caustic agents
- All cables must be checked for wear and tear on a regular basis. Any defect cables must be replaced.



Warning!

If irregularities are observed, the SMPS-T160 must be replaced.

Repair

Only an authorised LINAK® service centre should repair LINAK SMPS-T160. Products to be repaired under warranty must be sent to an authorised LINAK service centre.

In order to avoid the risk of malfunction, all SMPS-T160 repairs must only be carried out by an authorised LINAK Service shop or repairer, as special tools and parts must be used.

If a product is opened by unauthorised personnel there is a risk that it may malfunction at a later date.

Main groups of disposal:

LINAK products may be disposed of, possibly by dividing them into different waste groups for recycling or combustion.

Product	Metal scrap	Cable scrap	Electronic scrap	Plastic recycling or combustion
SMPS-T160	X	X	X	X

We recommend that our product is disassembled as much as possible at the disposal and that you try to recycle it.

Warranty

There is an 18 months' warranty on TECHLINE® products against manufacturing faults calculated from the production date of the individual products (see label). LINAK warranty is only valid in so far as the equipment has been used and maintained correctly and has not been tampered with. Furthermore, the SMPS-T160 must not be exposed to violent treatment. In the event of this, the warranty will be ineffective/invalid. For further details, please see standard terms of sale and delivery for LINAK A/S.

Declaration of conformity



DECLARATION OF CONFORMITY

LINAK A/S

Smedevænget 8
DK - 6430 Nordborg

hereby declares that LINAK Switch Mode Power Supply, type SMPS-T160

complies with the EMC Directive: 2014/30/EU according to following standards:
EN 61000-6-1:2007, EN 61000-6-3:2007

complies with Low Voltage Directive 2014/35/EU according to the standard:
EN 61558-2-16:2009

complies with RoHS2 Directive 2011/65/EU according to the standard:
EN 50581:2012

Nordborg, 2014-12-05

LINAK A/S
John Kling, B.Sc.E.E.
Certification and Regulatory Affairs
Authorized to compile the relevant technical documentation

Original Declaration

DECLARATION OF INCORPORATION OF PARTLY COMPLETED MACHINERY

LINAK A/S
Smedevænget 8
DK - 6430 Nordborg

Herewith declares that LINAK TECHLINE ® products
as characterized by the following models and types:

Linear Actuators LA12, LA14, LA22, LA23, LA25, LA30, LA35, LA36, LA37
Power Supply SMPS-T160

comply with the following parts of the Machinery Directive 2006/42/EC, ANNEX I, *Essential health and safety requirements relating to the design and construction of machinery*:

1.5.1 Electricity supply

The relevant technical documentation is compiled in accordance with part B of Annex VII and that this documentation or part hereof will be transmitted by post or electronically to a reasoned request by the national authorities.

This partly completed machinery must not be put into service until the final machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC where appropriate.

Nordborg, 2014-12-05



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John Kling, B.Sc.E.E.
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Original Declaration

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